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A method and apparatus are provided for automatic reverse-direction or bi-directional quality of service treatment of network data flows. A network device located at the edge or border of a network, such as a router that is connected to another network, identifies a data flow originating within its network and directed outside the network, and having packets set with quality of service treatment values. Identified quality of service treatments may be IP precedence, DSCP marking of packets in the flow, an RSVP PATH message, etc. The network device creates and stores, in its local memory, values that uniquely identify the flow and that tell the device how to treat packets of the same flow that are transmitted in the opposite or inbound direction. Upon identifying a corresponding inbound flow with quality of service treatment, all packets of the flow are given a pre-configured quality of service treatment based upon the quality of service treatment of the originally identified flow.